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Cushion for a vehicle seat

The invention relates to a cushion for a vehicle seat
5 according to the pre-characterizing part of claim 1.

In a known cushion of this type (DE 33 06 871 A1),
shells are fitted into longitudinal grooves arranged in
the seat area and/or backrest area of the cushion core,
10 these shells being open toward the outside and being
connected at one end to a suction pump via a main
connection tube. In an alternative configuration of
this known vehicle seat, the cushion core is provided
with channels which pass through the entire thickness
15 of the core. The channels are open at both ends and
open out freely on the underside of the cushion, since
in this area they pass through a seat bucket of the
vehicle seat receiving the cushion. Both structural
configurations of the cushion involve air extraction or
20 air exchange in order to carry away the heat and
moisture which form between the covering layer and the
cushion when the seat is occupied by a passenger, and
in order thereby to improve the climate of the vehicle
seat.

25 In a known, heated vehicle seat (US 5 524 439), the
cushion body of the seat cushion and backrest is
provided, underneath a covering layer over the cushion
body, with transverse grooves into which there open air
30 inlet channels extending through the cushion body at
right angles to said transverse grooves. Temperature-
controlled warm air, generated in a heating pump with
heat exchanger, is blown into the inlet channels.

35 In a known vehicle seat (US 2001/0 035 669 A1), the

Amended sheet

cushion body of a seat cushion comprises a network of channels which pass through the cushion body in a large number of different directions. In a central area, a number of channels of by comparison greater internal diameter pass more or less perpendicularly through the cushion body and open out at the underside of said body. Arranged below the mouths of these channels there is a fan which sucks air through the cushion from the upper face of the cushion body.

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A known vehicle seat (US 3 770 318) has a seat cushion and a backrest in whose cushion bodies there are intersecting longitudinal and transverse grooves which are covered by a cushion lining. At the central area of the seat body, the cushion lining has four holes passing through it which communicate with the longitudinal and transverse grooves and with channels extending perpendicularly through the cushion body. Arranged directly underneath the holes, there are nonreturn valves which ensure that air does not flow out of the channels through the holes. The cushion body of the backrest has a similar design. At the end remote from the holes, the mouths of the vertical channels passing through the cushion bodies are connected to one another via a connection tube. As a result of vibrations caused by the person seated on the seat cushion, air is pumped out of the channels of the seat cushion into the channels of the backrest, thereby ventilating the latter.

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A known water-impermeable and breathable lining for mattresses (DE 201 20 207 U1) is composed of a layer of water-impermeable material in which intersecting longitudinal and transverse grooves are formed, and continuous tubes perpendicular to said layer are formed which, at one end, open into the points of intersection of the longitudinal and transverse channels and, at the other end, open out on the underside of the layer. By

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means of this structuring of the layer, a horizontal and vertical air intake and air removal is made possible during use of the mattress.

5 In a known vehicle seat (DE 198 05 173 C), the cushion in the seat part and backrest has a ventilation layer through which air can flow and a cushion lining stretched across the surface of the cushion directed toward the person occupying the seat. Air channels are
10 worked into the cushion and open out from the underside and rear side of the cushion directed away from the cushion lining and open into the ventilation layer. In these air channels, there are miniature fans which force air from underneath or behind the cushion into
15 the ventilation layer, and the air blown in is removed from the ventilation layer through channels which start from the ventilation layer and pass through the cushion.

20 In the case of a cushion for a vehicle seat of the type mentioned at the outset, that is to say a full-foam cushion, the object of the invention is to further improve the seat climate at minimal additional production cost.

25 According to the invention, this object is achieved by the features of patent claim 1.

The cushion according to the invention for a vehicle
30 seat, which can be a cushion for the seat part of the vehicle seat (seat cushion) or a cushion for the backrest (backrest cushion), has the advantage that the network of longitudinal and transverse grooves communicating with the environment via the channels
35 passing through the cushion core ensures very good removal of moisture from the surface of the cushion core made of moisture-impermeable material. The moisture passing through the covering layer is

transported via the longitudinal and transverse grooves to the mouths of the channels, and the moisture passes through the channels into the open. The air which is blown by the miniature fans into the network of longitudinal and transverse grooves, and which is removed again through the channels present in the cushion, generates a very intensive flow of air through the longitudinal and transverse grooves and very rapid removal of heat and moisture from the intermediate cushion area delimited by covering layer and cushion core.

Advantageous embodiments of the cushion according to the invention, with preferred refinements and configurations of the invention, are set out in the other patent claims.

The invention is described in more detail below on the basis of illustrative embodiments shown in the drawing, where the figures each show schematic views, specifically:

Fig. 1 shows a plan view of a seat cushion of a vehicle seat with the covering layer partially cut away,

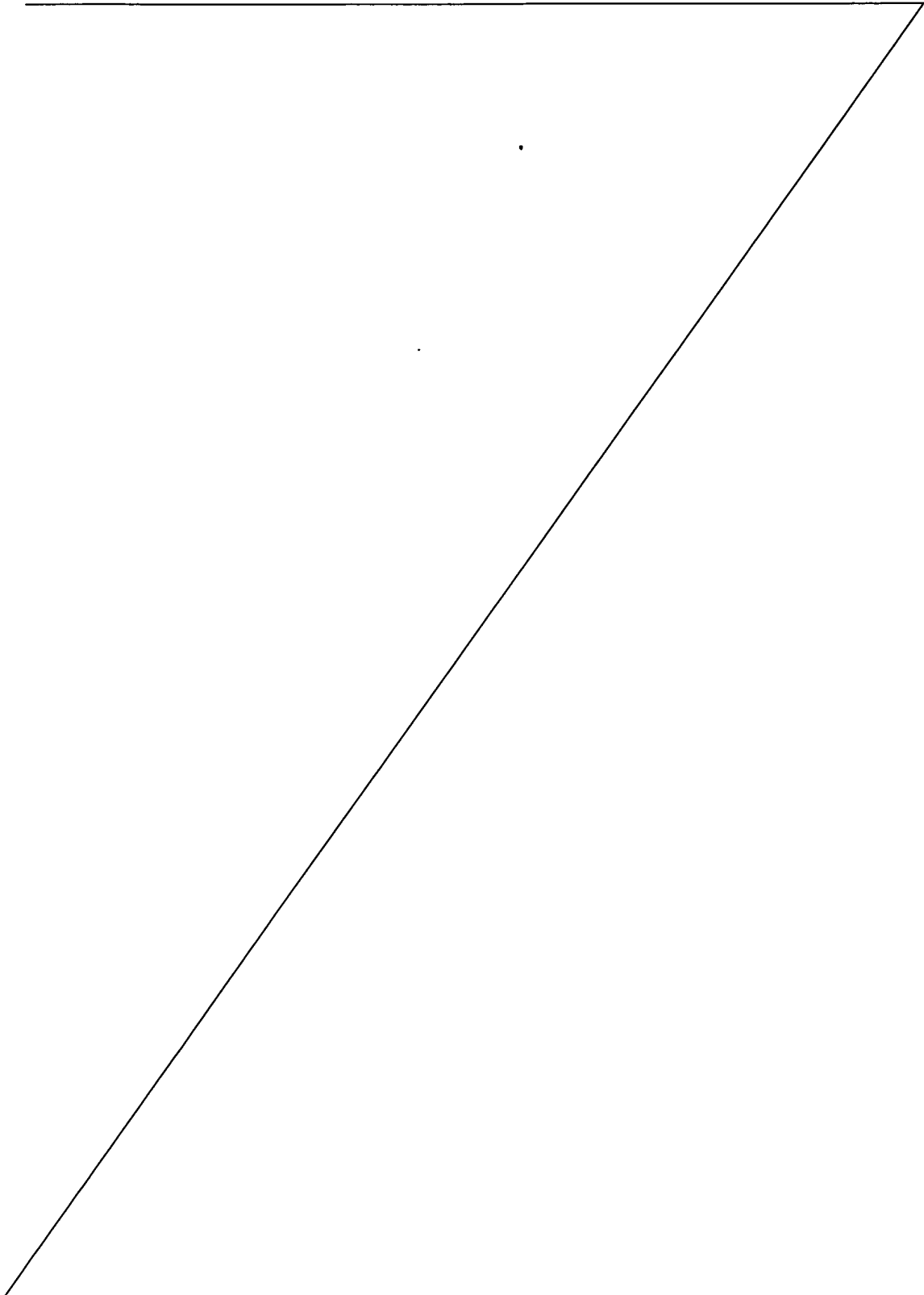
Fig. 2 shows a cross section along the line II-II in Fig. 1,

Fig. 3 shows the same view as in Fig. 1, but of a modified seat cushion, and

Fig. 4 shows a cross section along the line IV-IV in Fig. 3.

A vehicle seat has, in a known manner, a seat part and a backrest which are both covered with a cushion. Figures 1 and 2 show only the seat cushion of the

vehicle seat, but its structure, as described below,
applies also to the backrest cushion.



Patent claims

1. A cushion for a vehicle seat, with a cushion core
5 (11), particularly made of a foam material, which
is lined by an air-permeable and moisture-
permeable covering layer (12) and in which a
network is formed comprising grooves spaced apart
10 from one another, which are open toward the
covering layer and through which air is forced,
and channels (18) which pass through the entire
core thickness of the cushion core (11) and which,
at one end, open into grooves (16, 17) and, at the
15 other end, open out freely on the outer face of
the cushion core (11) directed away from these
grooves, characterized in that the grooves are
intersecting longitudinal grooves (16) and
transverse grooves (17) at whose intersection area
20 the channels (18) open out, in that at least one
shaft (21) is provided in the cushion core (11)
which passes completely through the core thickness
of the cushion core (11) and opens out in at least
one of the longitudinal and/or transverse grooves
25 (16, 17) and is open on the outer face of the
cushion core (11) directed away from the
longitudinal and transverse grooves (16, 17), and
in that a miniature fan (22), which sucks air in
from the area surrounding the cushion, is arranged
30 in the at least one shaft (21).
2. The cushion as claimed in claim 1, characterized
in that the mouth of the at least one shaft (21)
is positioned in the intersection area of a
longitudinal groove and transverse groove (16,
35 17).
3. The cushion as claimed in claim 1 or 2,
characterized in that the covering layer (12) has

a support (13), made of reticulated foam, and an air-permeable lining (14) stretching across the support (13).